



Surficial Geology of Lower Comb Wash, San Juan County, Utah

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**U.S. DEPARTMENT OF THE INTERIOR
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**DIGITAL DATABASE DESCRIPTION FOR THE SURFICIAL GEOLOGIC MAP OF LOWER
COMB WASH, SAN JUAN COUNTY, UTAH**

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INTRODUCTION

This digital map database, compiled from new mapping by the author, represents the general distribution of surficial deposits in lower Comb Wash. Together with the accompanying text file (readme.doc, readme.pdf, readme.txt, cw_pamph.doc, cw_pamph.pdf), it provides current information on the late Quaternary stratigraphy of the area covered. The database delineates map units that are identified by general age and lithology following the spatial resolution (scale) of the database to 1:12,000 or smaller. The content and character of the database, as well as three methods for obtaining the database, are described below.

A NOTE FOR THOSE WHO DON'T USE DIGITAL GEOLOGIC MAP DATABASES

Two sets of plotfiles containing images of much of the information in the database are available to those who do not use an ARC/INFO compatible Geographic Information System. Each set contains an image of a geologic map sheet and the accompanying explanatory pamphlet. There is a set available in PostScript format, and another in Acrobat PDF format (see sections below). Those who have computer capability can access the plotfile packages in either of the two ways described below; however, these packages do require winzip utilities to access the plot files. Requests for a CD copy of the digital database or plotfiles can be made by sending a blank CD-R or CD-RW with requests and return address to: Database Coordinator, U.S. Geological Survey, 345 Middlefield Road, M/S 975, Menlo Park, CA 94025. Plot files can also be acquired online at <http://geopubs.wr.usgs.gov/open-file/of01-424>.

Those without computer capability can obtain plots of the map files through USGS Plot-On-Demand service for digital geologic maps. To obtain plots of the map sheet and accompanying pamphlet, contact the USGS Information Services office at the following address: U.S. Geological Survey Information Services, Box 25286, Federal Center, Denver, CO 80225-0046. Or by phone (303)202-4200, fax (303)202-4695, or by email: infoservices@usgs.gov. Be sure to include the map reference OF 01-424.

DATABASE CONTENTS

This digital database package consists of the geologic map database and supporting data including base maps, map explanation, geologic description, and references. A second package consists of PostScript plot files of a geologic map and geologic description. The third package contains PDF files of a geologic map and geologic descriptions.

Digital Database Package

The first package is composed of geologic map database files for southern and northern portions of lower Comb Wash. Files with the designation 'cwn' have the base map Bluff Northwest Quadrangle. Files with the designation 'cws' have the base map Bluff Southwest Quadrangle. The coverages and their associated INFO directory have been converted into ARC/INFO export files. These export files are uncompressed and are easily handled and compatible with some Geographic Information Systems other than ARC/INFO. The export files included are:

cwn_drain.e00	cwn_drain	Drainages and annotation
cwn_anno.e00	cwn_anno	Annotation for poly coverage
cwn_poly.e00	cwn_poly	Depositional contacts and geologic units
cwn_profile.e00	cwn_profile	Location of stratigraphic description
cwn_xsect.e00	cwn_xsect	Location of geomorphic cross-sections
cws_anno.e00	cws_anno	Annotation for poly coverage
cws_drain.e00	cws_drain	Drainages and annotation
cws_poly.e00	cws_poly	Depositional contacts and geologic units
cws_xsect.e00	cws_xsect	Location of geomorphic cross-sections

The database package also contains the following export files with extraneous data used in the construct of the database:

geolin.lut.e00	geolin.lut	cwn_poly and cws_poly line lookup table
geo.lin.e00	geo.lin	lineset
cw_poly.lut.e00	cw_poly.lut	cwn_poly and cws_poly lookup table
geofont.txt.e00	geofont.txt	textset used for all annotation
color524.shd.e00	color524.shd	524 color shadeset
cw_import.aml	AML to convert all export files in the database to coverages and graphic files	

Postscript Plotfile Package

The second digital data package available contains the Post Script images described below:

- cw_map.eps: Encapsulated Post Script file plottable file containing complete map composition with geology, Comb Wash and tributaries, annotation, correlation of map units and legend of symbols and lines.
- cw_map.ai: Adobe Illustrator file containing complete map composition with geology, Comb Wash and tributaries, annotation, correlation of map units and legend of symbols and lines.
- cw_pamph.doc: An MS word document file of the report containing detailed unit descriptions and geological information, plus references cited.
- cw_readme.doc: An MS word document file of this report.

PDF file Description

- cw_map.pdf: Geologic map, correlation of map units, legend of symbols and lines and key to geologic units
- cw_pamph.pdf: Report containing detailed unit descriptions and geological information.
- cw_readme.pdf: A pdf version of this report

The PDF files were created from corresponding .ps files and are compatible with Adobe Acrobat version 3.0 and higher.

ACCESSING DATABASE CONTENTS

Arc/Info Export files

Arc export files can be converted to their proper ARC/INFO format using the ARC command 'import' with the option proper for the format desired. To ease conversion and preserve naming convention, an AML is enclosed that will convert all the export files in the database to coverages and graphic files and will also create an associated INFO directory. From the ARC command line type:

```
Arc: &r cw_import.aml
```

Arc export files can be read by other Geographic Information Systems. Refer to your documentation for proper procedure for retrieval of data.

Post Scripts and Portable Document Files

These files are packaged separately. PDF files come as is and can be downloaded or copied directly to your hard drive with no conversion aside from opening the file from Adobe Acrobat. The Post Script documents are zipped and compressed to a smaller file size. They can be decompressed using gzip.

DATABASE SPECIFICS

Procedure Used

Stable base-maps were digitized at the USGS Flagstaff Field Center using an Altek Datatab Proline AC32 digitizer. A tic file was created and projected into UTM zone 12. Lines, points, polygons and annotation were edited using ARCEDIT. ARC/INFO generated the following RMS error report after transforming the coverage from digitizer units to real world coordinates:

cwn_poly

Scale (X,Y) = (88928.188,111518.895) Skew (degrees) = (0.000)
 Rotation (degrees) = (4.486) Translation = (11198359.674,769183.308)
 RMS Error (input,output) = (0.000,1.185)

Affine X = Ax + By + C
 Y = Dx + Ey + F
 A = 88655.719 B = -8723.046 C = 11198359.674
 D = 6956.007 E = 111177.212 F = 769183.308

tic id	input x	input y	x error	y error
	output x	output y		
1	-109.625	37.500	1.739	-0.073
	1152360.497	4175776.565		
2	-109.625	37.459	0.361	-0.039
	1152721.264	4171196.031		
3	-109.625	37.417	-0.699	0.017
	1153089.914	4166510.967		
4	-109.625	37.375	-1.401	0.094
	1153089.018	4161879.247		
5	-109.667	37.375	1.743	-0.073
	1149753.930	4161589.349		
6	-109.667	37.417	0.354	-0.038
	1149391.917	4166220.957		
7	-109.667	37.459	-0.702	0.018
	1149025.384	4170905.908		
8	-109.667	37.500	-1.396	0.094
	1148666.688	4175486.344		

cws_poly

Scale (X,Y) = (306.792,306.432) Skew (degrees) = (-0.025)
 Rotation (degrees) = (-86.984) Translation = (1143195.696,4161712.220)
 RMS Error (input,output) = (0.010,2.936)

Affine $X = Ax + By + C$
 $Y = Dx + Ey + F$

A = 16.140 B = 306.000 C = 1143195.696
 D = -306.367 E = 16.256 F = 4161712.220

tic id	input x	input y	x error	y error
	output x	output y		
1	1.234	33.457	-0.550	-1.217
	1153454.018	4161879.247		
2	16.360	33.856	1.835	4.009
	1153817.864	4157246.395		
3	31.513	34.240	0.760	-3.706
	1154181.017	4152617.968		
4	46.651	34.620	-2.047	0.914
	1154544.434	414791.737		
5	46.950	22.507	-0.123	1.755
	1150840.753	4147692.387		
6	31.815	22.130	1.565	-3.621
	1150479.420	4152328.503		
7	16.667	21.744	0.056	2.643
	1150118.351	4756956.817		
8	1.536	21.355	-1.467	-0.777
	1149756.592	4161589.577		

Map Projection

<u>Parameter</u>	<u>Description</u>
Projection	UTM
Units	meters on the ground
Zone	12
Datum	NAD27

The content of the geologic database can be described in terms of the lines and the areas that compose the map. Descriptions of the database fields use the terms explained below

Database Fields

<u>Parameter</u>	<u>Description</u>
Item name	name of database field
Width	maximum number of characters or digits stored
Output	output width
Type	B=binary integer; F=binary floating point number; I=ASCII integer; C=ASCII character string

The arcs are recorded as strings of vectors and described in the arc attribute table (AAT). They define the boundaries of the map units, map boundaries and other linear features in *cwn_poly* and *cws_poly*. These distinctions and the geologic identities of the boundaries are stored in the *LTYPE* field according to their line type.

Arc Attribute Table Definitions

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N. DEC
1	FNODE #	4	5	B	--
5	TNODE #	4	5	B	--
9	LPOLY #	4	5	B	--
13	RPOLY #	4	5	B	--
17	LENGTH	8	18	F	5
25	CWN_POLY#	4	5	B	--
29	CWN_POLY-ID	4	5	B	--
33	LTYPE	35	35	C	--

Description of AAT Items

<u>ITEM</u>	<u>DESCRIPTION</u>
FNODE #	Starting node of an arc
TNODE #	Ending node of the arc
LPOLY #	Polygon to the left of the arc
RPOLY #	Polygon to the right of the arc
LENGTH	Length of the arc in meters
CWN_POLY #	Unique internal number
CWN_POLY-ID	Unique identification number
LTYPE	Line type

Domain of Line Types recorded in LTYPE field

cwn_poly and cws_poly

- contact_certain unit contacts mapped with certainty
- contact_approx unit contacts mapped approximately
- terrace_scarp terrace scarp; hatches point down slope
- prehistoric_road location and path of prehistoric road

cwn_drain and cws_drain

- ephemeral_stream ephemeral stream channel
- perennial_stream perennial stream channel

cwn_anno and cws_anno

- leader annotation leader

cwn_xsect and cws_xsect

- cross_section location and approximate path of surveyed geomorphic cross-section

POLYGONS

Map units (polygons) are best described in the *cwn_poly* and *cws_poly* polygon attribute tables (PAT). This identifies the units recorded in the *PTYPE* field by map label. Individual map units are described more fully in the accompanying text.

Definition of polygon attribute table:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N. DEC
1	AREA	8	18	F	5
9	PERIMETER	8	18	F	5
17	CWN_POLY#	4	5	B	--
21	CWN_POLY-ID	4	5	B	--
25	PTYPE	6	6	C	--

Description of item name

<u>ITEM NAME</u>	<u>DESCRIPTION</u>
AREA	Area of polygon in square metres
PERIMETER	Perimeter of polygon in meters
CWN_POLY#	Unique internal number
CWN_POLY-ID	Unique identification number
PTYPE	Unit name

Domain of PTYPE (map units)

af, ta, mct, bct, t3, t2, t1, col, Trc , Trm , Pcm, mfp, st

P represents permian strata, Tr represents triassic strata, t# represent Quaternary terraces. Polygons were assigned colors from the shadeset COLOR524.SHG and are related to the CWPOLY.LUT lookup table.

POINTS

Geologic point feature information (stratigraphic profile locations) is recorded as coordinate data with related information. this information is described in the cwn_profile point attribute table (PAT).

Definition of point attribute table

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N. DEC
1	AREA	8	18	F	5
9	PERIMETER	8	18	F	5
17	CWN_PROFILE#	4	5	B	--
21	CWN_PROFILE-ID	4	5	B	--
25	ID-NO	6	6	C	--

Description of item names

<u>ITEM</u>	<u>DESCRIPTION</u>
AREA	Degenerate area of a point
PERIMETER	Degenerate perimeter of a point
CWN_POINT#	Unique internal number
CWN_POINT-ID	Unique identification number
ID-NO	

ANNOTATION

cwn_anno and cws_anno contain the annotation for the features contained in cwn_poly and cws_poly.

SPATIAL RESOLUTION

Use of this digital geologic map database should not violate the spatial resolution of the data. Although the digital form of the data removes the constraint imposed by the scale of the paper map, the detail and accuracy inherent in map scales are also present in the digital data. This database was created and edited at the scale of 1:12,000, which means that higher resolution data are generally not present. Plotting at scales larger than 1:12,000 will not yield greater real detail but may reveal fine-scale irregularities below the intended resolution.